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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,757	11/18/2003	William Robert Licht	2443.004US1	5267

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EXAMINER

MERKLING, MATTHEW J

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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09/17/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/715,757	Applicant(s) LICHT ET AL.	
	Examiner MATTHEW J. MERKLING	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 3-9 is/are allowed.
- 6) ☒ Claim(s) 10-18 is/are rejected.
- 7) ☒ Claim(s) 2 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/30/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/30/08 has been entered.

Claim Objections

2. Claims 2 and 11 are objected to because of the following informalities: In claims 2 and 11 the limitations are noted by numeral (iii), however newly amended claims 1 and 10 also contain numeral (iii). As best understood, claims 2 and 11 should be noted with numeral (iv) as opposed to (iii).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 10, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Lenglet et al. (US 2002/0106538).

Regarding claims 10, 17 and 18, Lenglet discloses an apparatus for the exothermic generation of syngas by the partial oxidation (paragraph [0015]) of a hydrocarbon-containing fuel comprising:

(i) reacting the hydrocarbon-containing fuel with an oxygen containing gas in a first reactor (3) to produce the syngas and byproducts comprising CO₂, H₂O and soot (paragraphs [0004], [0022]); and

(ii) introducing the syngas and byproducts into a second reactor (filter, 7, 14, see flow diagram of Fig. 1) containing a non-carbonaceous material (ceramic, paragraph [0027]) that traps the soot for a sufficient time such that the majority of the byproduct soot is gasified (paragraph [0041]) via reaction with the byproduct CO₂ (from gasification of soot) to produce a syngas stream that is depleted in the soot (see abstract).

Regarding limitations recited in claim 10 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states “Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Regarding claim 18, Lenglet further discloses a fluid (via valve (21)) added to the syngas and byproducts (see flow diagram of Fig. 1) produced by the first reactor prior to introducing the syngas and byproducts into the second reactor.

5. Claims 10, 12, 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Edlund et al. (US 2001/0045061).

Regarding claims 10, 12 and 16, Edlund discloses an apparatus for partial oxidation for the production of hydrogen and carbon monoxide, or syngas (paragraph [0020]) from hydrocarbon containing fuel (see abstract) comprising:

(i) reacting the hydrocarbon-containing fuel (stream 16) with an oxygen containing gas (partial oxidation, paragraph [0020]) in a first reactor (32) to produce the syngas (hydrogen rich stream) and byproducts comprising CO₂, H₂O (inherent from partial oxidation of hydrocarbon feed) and soot (particulates, see abstract); and

(ii) introducing the syngas and byproducts (via conduit 36) into a second vessel (filter, 60) containing a non-carbonaceous material (sintered metal, ceramic, paragraph [0043]); and

Regarding limitations recited in claims 10 and 17 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states “Expressions relating the

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apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Regarding claim 15, Edlund, as discussed in claim 10 above further discloses the non carbonaceous material contained in the second reactor (filter) is in the form of rings (discs, paragraph [0043]).

6. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Edlund et al. (US 2001/0045061) as applied to claim 10 above, and further evidenced by Clawson et al. (US 6,641,625).

Regarding claim 11, Edlund, as discussed in claim 10 above, further discloses recovering a portion of the heat from the soot depleted syngas stream partial oxidation and using at least a portion of the recovered heat to facilitate the additional production of syngas via catalytic reforming of natural gas and steam (paragraph [0020]), which is known in the art as autothermal reforming (see Clawson col. 3 lines 53-62).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lenglet et al. (US 2002/0106538) as applied to claim 10 above, and further in view of Michalko (US 3,714,071).

Regarding claims 13 and 14 Lenglet as discussed in claim 10 above, teaches the non-carbonaceous material as ceramic combustion catalyst support for the combustion (high temperature) of hydrocarbons (paragraphs [0050] and [0054]) but does not explicitly disclose spherical alumina (a variety of ceramic) as the non-carbonaceous material.

Michalko also discloses a method and apparatus for treating combustion byproducts by oxidation/combustion of hydrocarbons (col. 1 lines 11-20). Michalko teaches low-density alumina spheres/catalyst support (see abstract) that are utilized in an internal combustion engine to further oxidize/combust byproducts of the incomplete combustion of a fuel (col. 1 lines 3-30). Michalko teaches this as a preferable way of improving the strength of the oxidation/combustion catalyst at high temperatures (see abstract and title).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the low density alumina spheres of Michalko in the 2nd reactor of

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Lenglet as a preferable way of oxidizing the incomplete combustion byproducts (soot) with a catalyst and catalyst support of high strength at high temperatures.

Response to Arguments

10. Applicant's arguments filed 7/30/08 have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment.

Allowable Subject Matter

11. Claims 1 and 3-9 allowed.

12. Claim 2 would be allowable if an amendment is made to overcome the objection set forth above.

13. The following is a statement of reasons for the indication of allowable subject matter: In claim 1, Applicant claims a second reactor which traps soot exhausted from a syngas producing reactor which operates at steady state and gasifies the majority of the trapped soot in the second reactor with the by-products of the syngas producing reactor in order to regenerate the filter/apparatus that traps soot. The prior art also teaches a second reactor which traps soot generated in a syngas producing reactor and gasifies said soot to remove the soot from the filter/apparatus that traps soot. However, the prior art does not teach or suggest a second reactor which operates at steady state and gasifies a majority of the soot with the by-products of the syngas producing reactor at the same rate at which the second reactor traps the soot. Furthermore, the prior art teaches regenerating/removing the soot from the second reactor by

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shutting down the second reactor and using a source other than the byproducts of the syngas producing reactor to gasify the soot.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. MERKLING whose telephone number is (571)272-9813. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. J. M./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795